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CHEMICAL EXAMINATION OF THE ROOT OF LASIOSIPHON MEISSNERIANUS.

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A Contribution from the Wellcome Chemical Research Laboratories, London.

The genus *Lasiosiphon* belongs to the natural order of *Thymelæaceæ*, which, although containing about 300 species, appears to afford but one drug that has received the official recognition of any of the national pharmacopœias, this being the mezereon bark, from *Daphne Mezereum*, Linné, and other European species of *Daphne*.

The plants of the above-mentioned natural order are mostly shrubs, a few of which are found in temperate regions of the Northern Hemisphere, but which are more common within the tropics, and occur most abundantly in South Africa and Australia. They are remarkable, among other characters, for the great tenacity of the inner bark, and, in many species, the latter possesses extremely acrid properties.

In a "Revised List of the Flora of Natal," compiled by J. Medley Wood, and published in the *Transactions of the South African Philosophical Society*, 1908, vol. xviii, Part 2, p. 218, twenty species of *Lasiosiphon* are enumerated, of which, however, several are unnamed, and only their approximation to other recognized species is indicated. In the list referred to, the following is recorded respecting the plant under present consideration:

"*L. Meisnerianus*, Endl., Var. Inanda, 1800 feet alt., *Wood*, 36; Van Reenen, 5–6000 feet alt., *Wood*, 4520; var, near Durban, *Wood*,

1028; var., *Gerrard* and *McKen,* 807; near Durban, *Wood,* 104, 529; without precise locality, Krauss, 237. Compare also De Candolle's *Prodromus,* vol. xiv, p. 594, where the specific name of the plant is evidently more correctly written *Meissnerianus.*

In a work by Andrew Smith, entitled "A Contribution to South African Materia Medica," third edition, 1905, there are several references (pp. 35, 77, 125) to the plant designated by him as *Lasiosiphon Meisneri*—Kaffir, *isi-Dikili,* from which the following items of information respecting its characters and uses may be noted.

"The Lasiosiphons form a rather notable group. They have a heath-like appearance, with a tubular corolloid calyx, limb 5-parted. The flowers form a head with an involucre. The roots are very stringy and are used as sinnet. They are very scorching, if chewed, and will burn the tonsils and throat for twenty-four hours. Three species are used medicinally—*L. Meisneri; L. anthylloides;* and *L. linifolius.* The first of these is distinguished by its saffron or dark-orange flowers. Its leaves are three-quarters of an inch long, and less than one-eighth inch wide, hairy at the back. The involucral leaves are one-half inch long.

"*Lasiosiphon Meisneri* is a considerable bush. It is found in the lower basin of the Kat River, near its entrance into the Fish River, and is also found in various parts of Tembuland, being there used as a cure for snake-bite. The dose is from one-half to three-quarters of an ounce of the dried root, but some employ both leaves and root. The preparation is by infusion.

"It is somewhat difficult to say what its action in snake-bite precisely is, whether it is simply a powerful stimulant, almost blistering in its action, and long continued, and whether the same property does not explain the other uses of the plant. If a small fragment is chewed, it is nearly tasteless at first, but its burning quality is presently developed. Great caution must be used as to the quantity administered.

"*L. Meisneri* is also employed in cases of karroo fever, and a paste of the leaves for sores."

It has, furthermore, been noted by Smith (*loc. cit.,* p. 78) that "the root should always be used tolerably fresh, as it loses its virtue by long keeping."

One species of *Lasiosiphon,* namely, *L. eriocephalus,* Dcne., has been described in the "Pharmacographia Indica," vol. iii, p. 225. This is a native of the Deccan Peninsula and Ceylon, and is common

on the hills of Western India. The plant is a shrub, with leaves like the willow, and the bark is a powerful vesicant, this property being attributed to a resinous constituent.

The most recent notice of the *Lasiosiphons* appears to be that contained in a short paper on South African Plants which was contributed by Mr. G. E. Oliver to the *Chemist and Druggist,* London, April 25, 1908, p. 645. It is there stated that these plants are much esteemed among the natives for their tonic and blood-purifying properties, and also in the treatment of certain kinds of sore throat. The activity of the plant is said to reside chiefly in the root-bark, and with regard to the constituents of the latter Mr. Oliver has recorded the following observations: "A chemical examination of the root-bark shows it to contain a very small quantity of volatile oil, tannin (to which its virtue in sore throat would perhaps be attributable), and a resin, and it is apparently to this resin that its scorching properties are due, as it produces the sensation above referred to on the tongue, though it does not yield it to acidulated water when boiled with the latter. It contains no alkaloid."

EXPERIMENTAL.

The material used for this investigation consisted of the roots of the above-described plant, *Lasiosiphon Meissnerianus,* Endl., which had been kindly supplied by Mr. G. E. Oliver, of East London, Cape Colony, and was specially collected for the purpose.

The roots in question were more or less contorted and very irregular in size, some of the larger ones being as much as 10 centimetres (about 4 inches) in circumference. They were of a dark brown color, very rough and warty on the outer surface, and had a relatively thin bark, surrounding a lighter colored, very fibrous wood. As has previously been observed, when a little of the bark is chewed, a burning sensation is soon developed in the throat, which persists for several hours.

As a preliminary experiment, a small portion (10 grammes) of the ground material was tested for the presence of an alkaloid, but with a perfectly negative result.

Another portion (25 grammes) of the ground material was successively extracted in a Soxhlet apparatus with various solvents, when the following amounts of extracts, dried in a water-oven, were obtained:

Petroleum (b. p. 35–50°)	extracted.	0.20 Gm.	= 0.80 per cent.
Ether	"	0.45 "	= 1.80 " "
Chloroform	"	0.10 "	= 0.40 " "
Ethyl acetate	"	0.60 "	= 2.40 " "
Alcohol	"	2.10 "	= 8.40 " "
	Total,	3.45 Gm.	= 13.80 per cent.

For the purpose of a complete examination a quantity (29.94 kilogrammes) of the ground material was extracted by continuous percolation with hot alcohol, this operation having been kindly conducted by Messrs. Stafford Allen and Sons, of London. After the removal of the greater portion of the alcohol, a viscid, dark colored extract was obtained, amounting to 7.98 kilogrammes.

The whole of the above-mentioned extract was mixed with water, and distilled in a current of steam in a suitable apparatus for several hours, but no essential oil or other volatile product was obtained.

After the above operation there remained in the distillation apparatus a quantity of a dark brown resin and a dark colored aqueous liquid. The resin was separated by filtration, and well washed with hot water until nothing further appeared to be removed. The aqueous liquid and washings, on cooling, deposited a brown, resinous product, which was separately collected, and amounted to 320 grammes. A small portion (25 grammes) of this product was dissolved in alcohol, mixed with purified sawdust, and extracted in a Soxhlet apparatus with the following result:

Petroleum (b. p. 35–50°)	extracted,	*nil*	——
Ether	"	2.0 Gm.	= 8.0 per cent.
Chloroform	"	*nil*	——
Ethyl acetate	"	5.0 Gm.	= 20.0 per cent.
Alcohol	"	17.0 Gm.	= 68.0 per cent.
	Total,	24.0 Gm.	= 96.0 per cent.

These extracts were entirely resinous, and, although subjected to treatment both with acids and alkalis, nothing definite could be obtained from them.

The aqueous liquid, from which the resinous material had been completely removed, was concentrated to a small bulk, and shaken with ether, but only a trace of an amorphous product was thus ob-

tained. On subsequently shaking the liquid with amyl alcohol a quantity of amorphous material was removed. This was heated with a 10 per cent. solution of sodium hydroxide, the alkaline liquid being then acidified and extracted with ether, but it yielded nothing definite.

The aqueous liquid was then treated with a slight excess of a solution of basic lead acetate, when an abundant brown precipitate was produced. This was collected, well washed with water, then suspended in water, and decomposed with hydrogen sulphide. On filtering the mixture, and concentrating the filtrate, a resinous product was obtained which responded to the usual tests for tannic matter.

The filtrate from the basic lead acetate precipitate was treated with hydrogen sulphide for the removal of the lead, and the clear, filtered liquid evaporated to a small volume. It was found to contain a quantity of sugar, since it readily reduced Fehling's solution, and yielded *d*-phenylglucosazone, melting at 204–205°.

Examination of the Resin.

The resin which had been separated from the aqueous liquid, and thoroughly washed with hot water, as above described, amounted to 3685 grammes, thus corresponding to 12.3 per cent. of the weight of the drug. It was a brown, powdery substance, which, when inhaled, had an irritating effect on the nostrils, and when brought on the tongue, especially in alcoholic solution, a burning sensation was soon developed, similar to that produced on chewing the bark of the root.

For the examination of this resin a quantity (300 grammes) of it was dissolved in alcohol, mixed with purified sawdust, and the thoroughly dried mixture then successively extracted in a Soxhlet apparatus with light petroleum (b. p. 35–50°), ether, chloroform, ethyl acetate, and alcohol.

Petroleum Extract of the Resin.

This was a dark green, amorphous mass, amounting to 26 grammes. It was dissolved in alcohol, and heated for about four hours in a reflux apparatus with an alcoholic solution of potassium hydroxide. The alcohol was then removed, water added, and the alkaline mixture extracted with ether. The ethereal liquid was washed, dried, and evaporated, when a small amount of a crystalline

substance was obtained, which separated from alcohol in plates, and gave the color reaction of the phytosterols. On recrystallizing the substance from a mixture of ethyl acetate and dilute alcohol it was obtained in the form of flat needles, melting at 132–133°.

0.1188, when dried at 110°, lost 0.0056 H_2O. $H_2O = 4.7$
0.1132 of anhydrous substance gave 0.3468 CO_2 and 0.1250 H_2O.
$C = 83.5$; $H = 12.2$
$C_{27}H_{46}O,H_2O$ requires $H_2O = 4.5$ per cent.
$C_{27}H_{46}O$ requires $C = 83.9$; $H = 11.9$ per cent.

This substance is thus seen to be a phytosterol, and a determination of its optical rotatory power gave the following result:

0.2722 of anhydrous substance, made up to 25 c.c. with chloroform, gave α_D — 0° 40′ in a 2 dcm. tube, whence α_D — 30.6°.

The acetyl derivative, when crystallized from acetic anhydride, separated in needles melting at 110°.

The alkaline liquid from which the above-described phytosterol had been extracted by means of ether was acidified and again extracted with ether, the ethereal liquid being dried and the solvent removed. A quantity of fatty acids in the form of a dark green mass was thus obtained. These acids were distilled under diminished pressure, and, by means of their lead salts, were separated into solid and liquid portions. The amount of solid acid obtained was 3 grammes. It distilled between 220 and 230°/$_{15mm}$., and, when recrystallized from ethyl acetate, melted at 64°.

0.1320 gave 0.3634 CO_2 and 0.1470 H_2O. $C = 75.1$; $H = 12.4$
$C_{16}H_{32}O_2$ requires $C = 75.0$; $H = 12.5$ per cent.

The solid acid thus appeared to consist of nearly pure palmitic acid.

The liquid acids distilled between 215 and 225°/$_{15mm}$. and amounted to 2.5 grammes. Determinations of the iodine and neutralization values gave the following results:

0.2276 absorbed 0.2308 iodine. Iodine value = 101.4
0.2034 neutralized 0.4025 KOH. Neutralization value = 197.9
$C_{18}H_{34}O_2$ requires Iodine value = 90.0; Neutralization value = 198.9

These results indicated that the liquid acids consisted chiefly of oleic acid, with a very small amount of an acid of a higher degree of unsaturation.

Ether, Chloroform, Ethyl Acetate, and Alcohol Extracts of the Resin.

These extracts were dark brown, resinous masses, and amounted to 24.7, 35.0, 47.0, and 150 grammes respectively.

The ether and chloroform extracts were examined by shaking their respective solutions successively with aqueous sodium carbonate and sodium hydroxide. Furthermore, all the above-mentioned extracts were heated with 5 per cent. sulphuric acid in aqueous alcohol, and with a 10 per cent. solution of sodium hydroxide, but by none of these methods could any definite product be obtained from them.

Fusion of the Resin with Potassium Hydroxide.

A quantity (25 grammes) of the powdered resin was gradually introduced into 150 grammes of potassium hydroxide in a state of fusion, and the temperature of the mixture maintained at about 260° for some time. After cooling, the mass was dissolved in water, the solution acidified with sulphuric acid, and distilled in a current of steam. The distillate contained some volatile acid, which was converted into a barium salt, the latter amounting to 2.5 grammes. An examination of this salt showed the volatile acid to consist chiefly of a mixture of formic and butyric acids.

After the removal of the volatile acids, as above described, the liquid in the distillation flask was separated by filtration from a quantity of resinous material, and extracted with ether. The ethereal liquid was then shaken successively with a solution of sodium carbonate and a 10 per cent. solution of sodium hydroxide. The sodium carbonate liquid was acidified and extracted with ether, but on evaporating this ethereal liquid only a small amount of a tarry residue was obtained, the solution of which gave a green color with ferric chloride. The solution of sodium hydroxide removed nothing from the ethereal liquid, and on finally evaporating the latter a small amount of a dark colored, amorphous product was obtained, which possessed an exceedingly unpleasant odor.

Notwithstanding the very complete examination to which the roots of *Lasiosiphon Meissnerianus*, Endl., have been subjected, it will be seen that they have yielded but little of chemical interest. The chief constituent of the root is an amorphous resin, to which, as had previously been observed, its acrid properties are evidently due.

In conclusion, the author desires to express his indebtedness to Dr. F. B. Power for having suggested this research, and for the kind assistance he has afforded throughout the course of the work.

THE PREPARATION OF THYROID EXTRACT FOR THERAPEUTIC PURPOSES.

By S. P. Beebe, Ph.D., M.D.

During the last ten years there has been a marked increase in the interest shown toward the physiology of the internal secretions, and the therapeutic value of organ extracts has been the subject of much debate. The thyroid gland has been the centre of much of this discussion and its usefulness as a therapeutic agent in other conditions than those of the classical myxœdema has been demonstrated so thoroughly that the demand for a standard preparation may no longer be ignored. The manufacturers at the present time supply a variety of thyroid products prepared by different methods, and undoubtedly of differing therapeutic effects. The terminology shows great confusion and the precise nature of the substance that is provided is generally not known. For instance, the term iodothyrine which was used by Baumann [1] to describe the substance which he obtained by hydrolyzing thyroid glands with ten per cent. sulphuric acid. This substance was found to make up 2–5 per cent. of the glands by weight, it was insoluble in acids, soluble in alcohol and alkalies, contained 9.3 per cent. iodine, and from the experiments of Roos it was thought to represent all the physiological activity of the gland. The same term, "thyreoiodin," was used by Roos [2] to indicate "the alcoholic precipitate of a glycerin extract of the well-pulverized gland dried at body temperature." In Merck's index for 1907 iodothyrine is the name given to "milk sugar trituration of the active constituent of the thyroid gland, 15 grains of which contain 1/200 grains of iodine." In some instances supposed thyroid preparations have been found to consist of meat proteids impregnated with potassium iodide, or a poor quality of gland has been enriched by the addition of inorganic iodine.

The experience of clinicians confirms the belief that the commercial preparations are not uniform and that they are at times entirely inactive. Analyses of many preparations now on the market have

been made in this laboratory for the iodine content and it has been found that the products from various firms differ widely in the content of iodine, and also that the same preparations vary from time to time.

The precise relation which iodine has to the physiology of the thyroid has been a subject of much discussion and in a recent Bulletin from the Hygienic Laboratory Hunt and Seidell have reviewed the arguments pro and con in regard to this matter, and have given the results of a long series of experiments based upon a new method to show that there is a very close relation between iodine content and physiological activity. The precise function of the gland need not be called in question in discussing this point. We know that the thyroid gland has a very marked selective absorption for iodine. In this laboratory we have made many analyses to determine the iodine content of liver, kidney, and muscles taken from animals to which large quantities of potassium iodide had recently been given and have not found the slightest trace of it, while in the same animals the thyroid gland may have had its iodine content increased by 200–600 per cent. *In vitro* there is no more difficulty in iodizing a proteid from these other tissues than from the thyroid, so that Blum's [4] belief that proteids artificially iodized *in vitro* should be considered identical to those formed *in vivo* in the thyroid certainly has no justification.

(Blum has maintained the theory that the function of the thyroid is to detoxicate certain metabolic toxins by combining iodine with them, and in part bases the theory upon the experimental finding that thyroid extract which has been saturated with iodine *in vitro* no longer has the same physiological action that it does before the artificial saturation with iodine. From this finding he reasons that the addition of iodine destroys the toxic properties of the substances brought to the gland in the circulation, and that the more completely this is accomplished the less toxic the products are. The fallacy of this argument is to be found in the fact that iodizing of a proteid *in vitro* is a drastic chemical process in no way to be compared with the physiological action of the thyroid gland.)

No artificial product has ever been prepared which has the same effect upon metabolism, myxœdema, and cretinism that is obtained by iodized proteid from the thyroid gland. The discussion of the pharmacological action and therapeutic value of thyroid preparations need not involve us in discussion of the function of the gland.

DOES THYROID PROTEID FREE FROM IODINE HAVE ANY FUNCTIONAL ACTIVITY?

This is an old question and it has been the opinion of many experimenters from Baumann, Miwa, Stoeltzner, and Neumeister, and it has recently been reiterated by Jolin, that because many instances of iodine-free thyroids were found in animals enjoying apparent health, that therefore no essential relation exists between iodine content and physiologic action. Hunt [3] has modified this opinion somewhat by concluding that iodine-free thyroid has a mild degree of activity, but that it is not to be compared with normal iodized thyroid in its protective power to acetonitril poisoning.

Such a conclusion as well as that of the older investigators is, however, open to the criticism that the methods for determining the presence of iodine may have been faulty. A large number of thyroid glands have been analyzed for iodine in this laboratory during the last three years and we have not found any which were absolutely iodine free. There is no question that such a finding is due to an improvement in the Baumann method of iodine determination. According to the Baumann [5] method the thyroid tissue is fused in a nickel crucible with sodium hydroxide and sodium nitrate. Only sufficient sodium nitrate is used to give a clear fusion mass. The melt is dissolved in water, acidified with sulphuric acid, nitrous acid added to set free the iodine, which is shaken out with chloroform or carbon bisulphide and estimated colorimetrically. Dr. L. W. Riggs,[6] working in this laboratory, has shown that during the fusion process a variable amount of the iodine is oxidized to iodate, which is not subsequently reduced by the nitrous acid, and which, therefore, is lost in the extraction with carbon tetrachloride and gives too low a reading.

$$5\ NaI + NaIO_3 + 3H_2\ SO_4 \longrightarrow 3I_2 + 3Na_2\ So_4 + 3H_2O$$

According to the above reaction five molecules of iodide set free the iodine from one molecule of iodate, and it follows that where the proportion of iodate is greater than this some of it must remain undetermined. When small quantities of iodine are present in the fusion mass a relatively larger proportion of the iodine is oxidized to iodate and the proportion of one molecule of iodate to five of iodide is exceeded, with a consequence that iodine is lost. When only very small quantities of iodine are present it may be entirely oxidized, and a report given of no iodine found in the gland. The

improvement which Dr. Riggs has introduced is the addition of an active reduction by Devarda's alloy of the solution of the fusion mass, thus reducing the iodate to iodide and insuring a full yield. The figures given in his paper show that it is with the glands containing only a very small quantity of iodine that the largest errors are made. For instance, with sheep thyroids, which contained only .03 mg. iodine per gramme of fresh gland, 77 per cent. of the iodine was found after reduction. Subsequent experience has borne out these findings and we have repeatedly had glands for analysis which were found to be iodine free by the older method, but were found to contain marked quantities of iodine after reduction. In no instance have we found a thyroid gland free from iodine, and we have analyzed a wide variety of thyroid glands during the last two years. In view of these facts I am of the opinion that we are not at present justified in saying that iodine-free thyroid has an effect similar to that obtained by the normal iodized product, and, furthermore, it seems probable that many of the results ascribed to iodine-free thyroid are really caused by a proteid containing only an exceedingly small quantity of iodine. The recent paper of Hunt and Seidell [3] gives the most striking evidence yet published that iodine-free thyroid does have the characteristic metabolic effect of the iodized gland, but I believe the explanation of their results is to be found in the fact that their method of determining iodine was faulty, and the quantity of material used for iodine analysis too small.

These authors are agreed, however, that iodine-containing thyroid is much more effective than iodine-free thyroid, and give figures to show that the physiological effect is in direct proportion to the iodine content. Such a conclusion is in harmony with the findings of most students of this subject and agrees with the experiments made in my laboratory. I regard it, therefore, as probable that functional activity is proportional to iodine content, other factors being the same.

The thyroid gland contains a variety of protein substances which contain iodine and according to some investigators other iodine-free proteids. The methods of isolating these proteins have not been uniform and as a result it seems probable that authors have given different names to the same substances. The most conclusive work upon the chemistry of the thyroid has been done by Oswald,[7] who is led to conclude that thyreoglobulin is the characteristic iodine-containing proteid found in the gland. He describes another pro-

teid, which he names nucleoproteid, free from iodine and without functional activity. In my laboratory we have used various methods of fractioning the extracts from different types and species of thyroid gland in the hope of obtaining a series of proteids varying somewhat in composition and physiological activity. Such a series we have obtained, but, contrary to Oswald, in no case have we found nucleoproteid or other proteid free from iodine nor have we found any of the primary or secondary albumoses obtained on digestion to be free from iodine. When tryptic digestion, or acid hydrolysis is carried beyond the biuret stage a variety of fragments containing iodine are obtained. Even in extracts from perfectly fresh glands the filtrates obtained after removing the heat coagulable proteids contain iodized peptones, and if the glands are not fresh the amount of these peptone-like substances is much increased.

It is evident, then, that when the whole thyroid gland is ground, dried, and pulverized for therapeutic use that a variety of iodine-containing proteid and non-proteid substances is included. Are they all necessary or equally valuable physiologically, and may it not be that some of them are actually harmful? In an endeavor to answer these questions and also to determine the best method of preparing the physiologically active portions for therapeutic use we have made many experiments. I shall not describe in detail the many methods employed to fractionate the proteids, but will outline the procedure which we have finally hit upon as the simplest and most effective for preparing thyroid extract for therapeutic use. We have used glands from sheep, beef, and pig. In so far as we can judge by the gross appearance only normal glands are selected and this I think is a valuable point, as heretofore only sheep glands have been used therapeutically and it became evident very early in this work that sheep from certain regions always had goitrous glands poor in iodine. Moreover, it was these glands that the abattoir preferred to furnish since they were sold by the pound and the glands necessary for a pound were more easily obtained if goitres were used. I have seen such glands in the course of preparation into thyroid extract at two commercial laboratories. Such glands are rich in proteid of the thyreoglobulin type but very poor in iodine. Obviously here is an adequate source for much of the variation of thyroid preparations. The normal glands are obtained in as fresh a condition as possible and are kept from autolysis by freezing. They are ground to a fine pulp and extracted with three to four

times their volume of normal saline solution made very faintly alkaline by sodium hydroxide. Three or four drops of a ten per cent. solution of sodium hydroxide are added to every litre of salt solution. The extract is shaken vigorously at room temperature for one or two hours and is then transferred to the refrigerator, where it is allowed to remain for twelve to eighteen hours. At the end of this time a large portion of the proteid has been dissolved by the saline. The clear extract is obtained by filtering first through gauze to remove the larger fragments and then through paper pulp by the help of a Buchner funnel, after the method of Osborne. As stated before, this extract contains a variety of proteids and proteid fragments and our object is to separate the pure iodine containing globulin from the other constituents by as brief and simple a method as possible. This may be accomplished by salting out the proteid, filtering and finally dialyzing the precipitate, a procedure which requires a great deal of time and which exposes the product to abundant opportunities for infection and decomposition. The plan we have finally adopted is to acidify with acetic acid and heat to 44° C. for 10 minutes. Extracts of the different species of glands behave in characteristic fashion. The addition of acetic acid to extract of sheep glands gives a scanty precipitate or none at all; such as does form may be filtered out and is found to be richer in iodine than any fraction obtained subsequently. On heating an abundant flocculent precipitate is obtained at 44° C. This precipitate is rich in iodine, it dissolves readily in a weak alkaline solution, and is precipitated again by acetic acid. Its behavior with regard to dialysis and salt precipitation is that of a globulin; it contains more iodine than any proteid obtained from the filtrate heating to a higher temperature, and is by far the most abundant proteid in the gland. If this proteid is removed by filtration and the filtrate heated to a higher temperature, a further precipitate is obtained at 65°–70°, a third at 82°–86°, and a fourth after boiling for some time. All of these proteids contain iodine but in relatively much less amount than in the precipitate at 44°, they form only a small part of the entire proteid content, and they do not redissolve in a weak alkaline solution.

After all coagulable proteids are removed the filtrate contains substances giving the proteid color reactions and containing a by no means negligible quantity of iodine. If the whole gland extract is used for therapeutic purposes it follows that all of the various iodized fractions are administered. I believe that some of these sub-

stances not only give no *beneficial* therapeutic action but are actually harmful.

The following experimental evidence is offered in partial substantiation of this statement. Four lots of guinea pigs were given identical amounts of iodine, .0001 mgm. of iodine for each 100 grammes body-weight. The first lot in the form of purified thyreoglobulin, precipitated from the protein extract by acidifying with acetic acid and heating to 44° C. The second lot in the form of the alcohol-soluble portion of the filtrate from the pepsin digestion of the glands. The third lot in the form of the alcohol-soluble portion of the residue from the pepsin digestion of the gland. The fourth lot from the alcohol-soluble portion from extracts from normal glands after removing all the coagulable proteid. The second and fourth fractions give all the proteid color reaction, but compared with the nitrogen content they contain relatively much less iodine. The third fraction corresponds to iodothyrin, and as will be seen it is very rich in iodine. To be certain of the dose which each animal received, the administration was by hypodermatic injection in each instance. The relation of iodine to nitrogen in each of these substances was as follows:

1. *Sheep thyreoglobulin.*
   1 c.c. solution contains 1.25 mgm. nitrogen.
   1 c.c. contains 0.012 mgm. iodine.
   1 gramme nitrogen contains .0096 gramme iodine.
2. *Pepsin digestion filtrate, alcohol-soluble portion.*
   1 c.c. contains 7 mgm. nitrogen.
   1 c.c. contains .0375 mgm. iodine.
   1 gramme nitrogen contains .00535 gramme iodine.
3. *Pepsin digestion residue, alcohol-soluble portion.*
   1 c.c. contains 0.14 mgm. nitrogen.
   1 c.c. contains .09 mgm. nitrogen.
   1 gramme nitrogen contains .6428 iodine.
4. *Alcohol-soluble portion of extracts from sheep glands after removing all coagulable proteid.*
   1 c.c. contains 10.22 mgm. nitrogen.
   1 c.c. contains .044 mgm. iodine.
   1 gramme nitrogen contains .0043 gramme iodine.

The pigs receiving iodine in the form of the thyreoglobulin increased fifty per cent. in weight during the experimental period, which lasted nearly two months, and had no pathological disturbance

whatsoever from the injections. They were scarcely to be determined from the control pigs that received no injections whatsoever. The pigs receiving the alcohol-soluble portion of the filtrate from pepsin digestion lost weight, and all three died during the first month with a large loss of weight. The pigs receiving the alcohol-soluble portion of the pepsin digestion residue, corresponding to iodothyrine, increased in weight like the normal animals and were not to be distinguished from the animals receiving the proteid injections. Those animals receiving the alcohol-soluble portion of the extract from the sheep glands from which all coagulable proteid had been removed gained somewhat in weight, but one died in convulsions before the experimental period was over, while the other two were not to be compared with the control pigs. From these results we must conclude that the second and fourth fractions were toxic. Their precise nature we do not know, but the behavior is that of a simple peptone. Somewhat similar results have been obtained from other of the cleavage products, and further experiments have given us conclusive evidence that these substances are, in proportion to their iodine content, not to be compared with the thyreoglobulin in protecting mice from acetonitril poisoning. The extensive experiments of Cunningham [8] give facts which coincide with the results obtained in this laboratory: *viz.*, the autolyzed thyroid gland contains toxic substances.

Since the discovery of iodothyrine, it has been generally considered that this substance is the physiologically active principle of the thyroid gland, and that all the effects upon metabolism peculiar to thyroid activity could be duplicated by the administration of this substance by mouth. It is the writer's opinion that such a conclusion is not justified by the facts.

The physiologically active substance in the thyroid is elaborated by the active cells lining the alveoli, and it seems probable that under normal conditions a considerable amount of this substance is secreted into the alveoli and retained there as reserve material. It may, however, pass from the gland cell directly into the blood and in some pathological conditions we find practically no colloid, but an unusually well vascularized, actively proliferating parenchyma, associated with symptoms of over-activity of this gland. As we find the secretion in normal glands it is not in the form of iodothyrine, but in the form of an iodized proteid, and a drastic chemical process is required to liberate the iodothyrine. Furthermore, the secretion

enters the blood directly and not through the stomach. To imitate the physiological conditions I am convinced that we should administer the same biological sort of thyroid proteid by hypodermic injection. The human patient should receive human thyroid proteid by hypodermic injection. Of course such a conclusion is of theoretical interest only, but during the last three years I have had many opportunities to compare upon human subjects the effects produced by administration of various forms of thyroid preparations and from these observations the only possible conclusion is that the human thyroid is by far the best for the human subject. When we give the human thyroid extract we give a substance ready for instant use, and a comparatively small quantity will act more effectively from the qualitative and quantitative stand-point than a larger quantity of any other kind of thyroid material. These other forms probably act very largely by stimulating the gland of the individual to whom they are administered.

In its effects upon simple goitre, myxœdema, cretinism, athyroid symptoms found occasionally in the later periods of exophthalmic goitre, and various metabolic disorders associated with hypofunction of the thyroid, there is no other substance which acts so economically and efficiently as the proteid precipitated from extracts of normal human thyroid glands by acetic acid and heat to 44° C.

For the reasons above outlined we should use only the proteid obtained by a similar method from animal glands. Accordingly the original precipitate is washed repeatedly with normal saline by decantion or centrifugation until the wash-water is free from biuret reacting substances. It is then dissolved by the addition of a little sodium hydroxide, the solution filtered through a thick paper mat and again precipitated by acidifying with acetic acid. Heat is rarely required for the second precipitation. The washing process is repeated and more proteid-like material removed from the precipitated globulin. The final washed precipitate is centrifugated or filtered out and dried at low temperature, or it may be kept in solution and after filtration through a Berkefeld kept for hypodermic administration.

Proteids have been prepared in this manner from glands of pigs, beeves, sheep, and the human gland. The prepared proteid shows quite as wide a variation in its iodine content as do the fresh glands. In the following table is given a series of iodine analyses of thyroid glands obtained from healthy animals.

Iodine in Milligrammes Per Gramme of Fresh Gland from Different Species.

Pig.	Sheep.	Beef.	Human.
.084	.006	.030	.060
.120	.013	.040	.080
.300	.016	.103	.094
.300	.016	.165	.200
.648	.018	.168	.216
.710	.018	.187	.316
1.040	.020	.260	.415
1.340	.041	.445	.615
1.470	.214	.610	.814
2.050	.318	.700	
2.88	.415	1.020	
		1.470	

From the above table it is evident that the iodine-content of thyroid glands shows wide variations. Before being used therapeutically it is essential that the proteid should be standardized on the basis of its iodine content, and a uniform intelligent dosage regulated thereby. For the standard we have selected the proteid obtained from normal human thyroid glands.

The average figures of a large number of iodine analyses of the proteid obtained from normal human thyroid glands by the process above described, namely, that of heating the acidified extract to 44° and thoroughly washing the precipitate, is as follows:

ONE GRAMME OF THE PURIFIED PROTEID FROM NORMAL HUMAN THYROID GLANDS CONTAINS 3.384 MILLIGRAMMES OF IODINE.

After the purified proteid from the animal glands is obtained, its iodine content is determined after the method devised by Dr. Riggs, noted above, and regardless of whether this proteid is richer or poorer in iodine than the standard, it is considered that each 3.384 mgms. of iodine represent one gramme of the active thyroid proteid. For the purpose of therapeutic administration the proteid is diluted with the appropriate amount of lactose and made up into two-grain tablets by the usual method. Tablets of different strengths are prepared; 1 per cent., 2 per cent., and 5 per cent. tablets have been found to give a sufficiently wide variation in strength to answer

all the usual requirements. By 1 per cent. tablet is meant that 1 per cent. of the dried weight of the tablet is made up of the purified thyroid proteid according to the standard above described. This may seem to be a very small dose, but our experience proves to us that many patients cannot take a stronger tablet than this. The 1 and 2 per cent. tablets are used almost entirely in the treatment of various types of goitre, some of them being of the atypical exophthalmic variety. It is well known that these patients cannot stand heavy dosing with thyroid proteid. The stronger 5 per cent. tablets are reserved almost exclusively for different metabolic disorders, such as various skin lesions or joint conditions, myxœdema, cretinism, or those conditions in which there is a markedly deficient thyroid activity. It will be observed that by the method of standardizing and preparing the proteids for therapeutic administration, a uniform physiological activity may be expected, regardless of the character of the glands from which the proteid was obtained. A 5 per cent. tablet always contains the same quantity of iodine whether the proteid from which it was made comes from a pig gland containing a relatively high quantity of iodine or from a sheep gland containing a relatively low quantity of iodine. For some purposes it has been found advisable to administer the proteid hypodermatically and, accordingly, solutions of the proteid in varying strengths, standardized on the iodine basis, have been put up in sealed glass tubes. The products prepared according to the method here outlined have been in use for about two and a half years. They have been employed in a wide variety of clinical conditions by a considerable number of experienced clinicians, and the results have demonstrated their value to such an extent that I have no hesitation in saying that this method of preparing and standardizing thyroid is superior to any method now in vogue, that it gives all of the physiologically active portions of the gland, that it contains none of the toxic, deleterious substances contained in the whole extract. In my judgment there is no reason for supplying the wide variety of thyroid preparations which now appear upon the market. The methods described above give everything that is necessary in such form that every therapeutic need is satisfied.

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ANTI-NARCOTIC LEGISLATION.*

By Samuel M. Clement, Jr.

I consider it a great honor to be invited by the Philadelphia College of Pharmacy to discuss with your professors and your students the interesting question of the Law of Narcotics. I have been intensely interested with this subject for the past year, and I realize how important the subject is, not only to pharmacists and physicians, but to the entire community; for, in the time that I have been working with the State Pharmaceutical Board and my friend Dr. Christopher Koch, I have been amazed at the evils to the community resulting from the misuse of narcotics.

It will be interesting to note that the first legislation enacted on the subject of narcotics in the United States was in the Tariff Bill of July 14, 1832, when opium was permitted to be imported to this country without duty; and each succeeding tariff law permitted the free entry of opium, until the Tariff Act of August 30, 1842, was passed, and for the first time a duty varying from 75 cents to $2.50 per pound was placed on opium. This continued until October 1, 1890, when the Tariff Law again placed opium on the free list, where it remained until July 24, 1897, when the Tariff Law of that year placed a duty of $1.00 a pound on opium. It was in 1850 that it was discovered that the Chinese of the Pacific coast were smoking large quantities of opium, and a few years after that the lower classes of the whites and negroes took to smoking opium; so that

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* Address delivered before the members of the Philadelphia College of Pharmacy, Friday, November 11, 1910.

a special schedule on opium used for smoking was placed in the Tariff Act of July 14, 1862, and put on it a tax of 80 per cent. *ad valorem.*

It was considered at that time by those interested in discouraging the smoking of opium, realizing what a deleterious effect it would have on those addicted to its use, that a large duty was advisable, believing that it would prevent its importation; but it soon became apparent that the use of the drug was becoming prevalent and that the quantities brought into this country did not diminish, but increased; this due to the fact that it was being smuggled into this country in very large quantities.

In the Tariff Act of June 30, 1864, in a special schedule, on opium used for smoking a duty of 100 per cent. *ad valorem* was placed; but this did not have the desired effect of preventing the importation of opium. The Tariff Act of July 14, 1870, placed a rate of $6.00 a pound on opium used for smoking, and the Tariff Act of March 3, 1883, again increased it to $10.00 a pound. On October 1, 1890. the Tariff Bill made a further increase to $12.00 a pound. It seemed, however, that the more duty was placed on opium, the smaller were the Custom returns and a larger amount of opium smuggled into the country; so that the tax on opium failed to have any effect in diminishing its general use, and the Dingley Tariff Bill of July 24, 1897, reduced the duty to $6.00 a pound. The next general legislation on the subject of opium was the National Food and Drugs Act of June 30, 1906, which made it mandatory for every one to declare the presence and quantity of opium contained in any article, either used as a medicine or used for food, or which contained any of the derivatives of opium. On February 9, 1909, Congress passed an Act absolutely forbidding the importation of smoking opium and making the possession of it a crime punishable by imprisonment. The wisdom of this legislation will become apparent as we review the general subject further on, because the members of Congress at last realized that smoking opium and the derivatives of opium are the worst menace to the human race that could possibly be imagined. The Tariff Act of 1909 put a duty on crude or medicinal opium containing 9 per cent. or over of morphine of $1.50 a pound, and under 9 per cent. $6.00 a pound. From 1860 to 1890 the tariff on morphine varied from $1.00 to $2.50 per ounce, and from 1891 to 1897 the duty on morphine was 50 cents an ounce; but, after 1897, it became $1.00 an ounce and in 1909 it became $1.50

per ounce. Prior to 1898 cocoa leaves and cocaine were admitted free of duty, but the alkaloid bore a duty of 25 per cent. *ad valorem* up to 1909. The Tariff Bill of 1909 placed a duty of five cents per pound on cocoa leaves and of $1.50 per ounce on cocaine. The General Appropriation Bill passed May 27, 1908, fixing the appropriation for the Post Office Department of the United States, contained the following words:

"No part of the appropriation herein made shall be used for the carrying in the mails of any malt, vinous, or intoxicating liquors, or intoxicating liquors of any kind; or any cocaine or derivative thereof."

It is interesting to note that on February 26, 1909, The American Association for the Advancement of Science on National Health passed the following resolution:

"We favor a prohibitory tariff, internal revenue tax, and other means which will restrict the use of cocaine, its substitutes and derivatives, to medical purposes."

The revised penal laws of the United States, which took effect January 1, 1910, and which were compiled under the direction of one of the Congressmen from our own State, the Hon. R. O. Moon, gave the Postmaster-General of the United States the power to prevent the passage of cocaine through the mails.

With these thoughts on the national legislation, let us turn our attention to what has been done in the way of legislation on the subject of narcotics by the various States. Forty-five States have passed legislation prohibiting the sale of cocaine except when sold under the prescription of a doctor. Twenty-four of the States regulate the sale of opium and its derivatives, and thirteen restrict the sale of chloral. There are three States that have not, as yet, passed any legislation on the subject of narcotics. A few States—and I am proud to say Pennsylvania is one—make it a crime to have cocaine in your possession.

With this great variance between the laws of the various States and the laws of the national government, let us consider for a moment in what a chaotic condition is this general subject, so important to the welfare of the citizens of our great country. Dr. Hamilton Wright, who has been placed by President Taft in a position of

authority in connection with the Department of State for the purpose of investigating the general subject and reporting to the President the result of his investigation, has made a very careful study of the general subject and he has published from time to time statistics that are most interesting and which, I believe, will have the effect of arousing a great public sentiment on this question. Dr. Wright has made a most thorough investigation, and great credit is due to him and the Department of State for what he has already accomplished. We find from Dr. Wright's statistics that, during the period from 1860 to 1869, there was imported into the United States 1,425,196 pounds of opium of all forms, and, during the period from 1900 to 1909, there was imported 6,435,623 pounds of opium. This, you will see, is an increase of 351 per cent. of opium imported into this country, while the population of the country during the same periods shows only an increase of 133 per cent. There are in the United States to-day about 120,000 Chinese, 35 per cent. of whom smoke about 100,000 pounds every year. As I said a few moments ago, it was discovered in 1860 that smoking opium had been adopted by the lower classes of the whites and negroes of this country, and this has grown so that we are told to-day that there are about 150,000 Americans who smoke annually about 68,000 pounds of opium. We frequently find, especially along the Pacific coast, white women who are living with Chinamen and smoking opium.

It will be interesting to note, by way of comparison, what effect opium has on the other countries. Italy, with a population of about 33,000,000, imports and uses but 6000 pounds of opium. Austria-Hungary, with a population of about 46,000,000, uses between 3000 and 4000 pounds of opium. Germany, with a population of about 60,000,000, uses about 17,000 pounds of opium a year, and Holland, with a population of about 6,000,000, imports and uses but 3000 pounds per annum. To the credit of all of these old countries, it can be said that they have the strictest laws regulating the sale of habit-forming drugs.

It is appalling when we consider that in the United States with a population of about 90,000,000 people, we consume the enormous quantity of over 400,000 pounds of opium every year—more than all the other countries I have mentioned put together. It has been conservatively estimated that only 25 per cent. of this enormous amount can find any legitimate use and that the balance of 300,000

pounds is used by the fiends, either in the form of smoking or by using morphine. It is said that 80 per cent. of the 400,000 pounds used in this country is used in the manufacture of morphine and that about 75 per cent. of morphine made in the United States is used by dope fiends. It will be interesting to know that these dope fiends are divided as follows:

Six per cent. of all the persons entering our large penal institutions have been found to be addicted to the opium habit in some form, and of the general criminal population of this country 45.48 per cent. are habitues of opium, morphine, or cocaine; 21.6 per cent. of the lewd women of this country and their hangers-on are also addicted to the drugs; 2.06 per cent. of the medical profession of this country are addicted to drugs; 1.32 per cent. of the trained nurses of this country are addicted to drugs; .684 per cent. of other professions are addicted and .18 per cent. of our adult population, outside of those enumerated, are addicted to opium or its derivatives.

We find that outside of the large cities, even into the country districts, the use of opium and its derivatives has increased tremendously. One hundred and fifty thousand ounces of cocaine are manufactured annually in the United States, of which about 135,000 ounces go to make demons out of human beings. Cocaine is without exception the most dangerous drug known to society. It is seductive in character and produces a sense of keen exhilaration and exaggerated power. It completely wrecks the individual and makes a dangerous criminal of him. A man or woman charged with cocaine will commit any crime or stoop to the lowest and most immortal acts. Most of the crimes committed by the Southern negroes are the result of coke-charged brains. It has been found that the cocaine habit is becoming very prevalent among the negro race, not only the negroes of the South, but the negroes of our own city and other cities of the North, and it has been found that in certain low dives in the South much of the whiskey sold is doctored with cocaine.

It has been said that the cocaine habit is essentially American; but do not let us think for a moment that it is confined entirely to the lower classes. In fact, it has invaded the higher ranks of the so-called society of our country, and it is astounding to find how general is its use among those who consider themselves the great social leaders of the country. Cocaine has invaded even the ranks of the Army and the Navy, and I regret to say that it has even

been found in the school-room; for in our own city we found schoolchildren buying cocaine from negroes in five and ten cent packages.

These statements are made with the idea of arousing a sentiment on this general subject; for, if it is not checked, no one can tell to what extent the evil is going to affect this country and its people.

It is known that the drug habit is a sort of a secret habit and all people who use drugs do so with the greatest secrecy. The best step that can be taken is to eliminate the secrecy as much as possible, and I desire to express my appreciation to the newspapers of Pennsylvania for having given the general crusade against cocaine so much publicity; for I know of nothing that will help to eliminate this terrible habit among our people more than publicity.

There should be an agreement between nations so that smuggling of opium will be impossible; secondly, we should have a Federal law to control the interstate traffic; and, third, we should have a uniform interstate law; because, of course, the national government can only control interstate commerce, but cannot control interstate trade. Next we must have laws that will be far-reaching and will carry with them severe punishments, and we must have eternal vigilance and honest, capable, trustworthy officials to enforce the law. At this time I desire to express my great appreciation for the noble work done in hunting out the sellers of opium and cocaine by the Department of Public Safety of Philadelphia. The Director of that Department and his assistants have been untiring in their efforts to co-operate with the State Pharmaceutical Board, and the records of the Court of Quarter Sessions of Philadelphia County will show that a great many of them have been punished and a great many more are still to be punished when the cases are tried.

President Taft has appointed delegates to the International Opium Congress, and we believe that an international agreement will be the result.

In framing legislation we should remember that drug fiends are largely the victims of circumstances and are more to be pitied than censured; but the careless physician who prescribes cocaine or morphine, or the careless pharmacist who refills prescriptions for cocaine and morphine, are the ones who should be severely dealt with, and the sale of patent and proprietary remedies doped with morphine and cocaine should be prohibited and the manufacturers should be severely punished, for we find proprietary remedies

recommended, for infants as well as adults, containing morphine and cocaine, and many a dope fiend to-day can properly charge the forming of that habit to the taking of morphine when a child, in patent medicines.

As I said a moment ago, the Federal government cannot prohibit the use of cocaine or morphine in the States; all it can do is to regulate interstate commerce with respect to it and prohibit importation, which will be done. The duty rests upon each individual State, however, to pass legislation which will be uniform, so that there will be no question of jurisdiction; so that there will be no question of one State prohibiting cocaine and another one permitting it. Pennsylvania has taken the lead in the legislation with reference to cocaine and morphine, and the officials of Pennsylvania, both State and municipal, have demonstrated that this evil can be dealt with successfully.

The following are some of the essential features of Hamilton Wright's Interstate Bill:

First: "That such an Act should demand the registration of every person who imports, produces, manufactures, compounds, distributes, or otherwise handles habit-forming drugs in interstate or foreign commerce.

Second: "That importers, wholesale compounding pharmacists, and wholesale dealers should pay a small per-annum tax of $10, and that retail pharmacists and other retail dealers, including physicians who buy in interstate commerce and who carry large supplies of the drugs, should pay a tax of from $1 to $3 per annum; that every one engaged in handling drugs should register and pay a tax."

Third: "That, without attempting to derive a revenue beyond the amount necessary to administer the act, all of the habit-forming drugs should have imposed upon them an internal-revenue tax of 1 cent an ounce, and that such tax should be paid by affixing to packages or other receptacles containing the drugs, an engraved stamp, to be affixed and cancelled according to law."

Fourth: "That all compounds or preparations manufactured from the original tax-paid drugs should be marked or branded in such a manner as to show the payment of the tax on the original drug."

Fifth: "That every person concerned in the importation, manufacture, remanufacture or compounding, selling or dispensing of habit-forming drugs and their preparation, should keep such books, render such returns, and give such bonds as may be determined by the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury."

Sixth: "That it should be unlawful for any person to sell, give away or otherwise dispose of in Interstate Commerce, any of the habit-forming drugs, their salts, derivatives, or preparations to any person other than a person who has registered and paid the special tax, public hospitals and scientific and public institutions excepted."

Seventh: "That all of such drugs, their derivatives and preparations imported should pay an internal-revenue tax equal to that imposed on the home-produced drugs."

Eighth: "That on trial for violation of such an act, illegal possession of such drugs should be deemed as sufficient evidence of such violation, unless the defendant shall explain the possession to the satisfaction of the jury."

Ninth: "That all returns required by such an Act should be filed and recorded in the office of the Commissioner of Internal Revenue, under such regulations as may be approved by the Secretary of the Treasury, and that these returns should be open to the inspection and certified copies should be made to the proper officials of any State, territory, or district under the jurisdiction of the United States who are charged with the enforcement of local laws regulating the prescribing, dispensing, sale, or use of such drugs."

Tenth: "That heavy penalties, either by fine or imprisonment, or both, should be imposed on the violator of such an Act."

By making this a revenue measure, it is placed in charge of the Treasury Department and that Department has a well-trained corps of collectors and secret service men, who could see to the proper enforcement of the Act.

I should like at this time to read to you a few thoughts with reference to legislation in the State of Pennsylvania that it would be well for you to consider, and I am also delighted to say to you that Senator James P. McNichol has promised me that he will father the legislation in the next House and Senate for the regulation

and sale of cocaine and morphine and will insist upon the severest penalties being placed in the Act, so that all those that we have been discussing who violate the law can be properly dealt with.

The following outline is suggested for a State Anti-Narcotic Law:

Cocaine, Eucaine, and Other Synthetic Substitutes, Their Derivatives, Salts, and Compounds.

1. Sold only on prescription of a registered physician, a dentist, or a veterinarian, which is not to be renewed or copied and must be kept on a separate file for five years, and a veterinarian shall not prescribe for human beings.

2. Wholesale druggists can sell to retail druggists, other wholesale druggist, or manufacturer of same article.

3. Manufacturers can sell to other manufacturers of same article or to wholesale druggists.

4. Manufacturers, wholesale druggists, and retail druggists shall keep accurate records of all sales and use of all cocaine, etc.

5. Manufacturers, wholesale druggists and retail druggists shall make monthly reports to the body or commission entrusted with the enforcement of the law, showing all sales and other uses to which it has been put.

6. Illegal possession a crime.

7. Prescription files and records subject to inspection of proper officers.

8. Severe penalties of imprisonment.

Morphine, Opium, or Their Derivatives or Compounds.

1. Sold only on prescription of registered physician, dentist, or veterinarian, which is not to be renewed or copied and to be kept on a separate file for five years. A veterinarian shall not prescribe for human beings.

2. Wholesale druggists can sell to other wholesale druggists, or manufacturers of same article or to a retail druggist.

3. Manufacturers can sell to other manufacturers of the same article, wholesale druggists, or retail druggists.

4. Manufacturers, wholesale druggists, and retail druggists shall keep accurate record of all sales and use of all morphine, opium, its salts, derivatives, and compounds.

5. Manufacturers, wholesale druggists, and retail druggists shall make monthly reports to the body or commission entrusted with the

enforcement of the law, showing all sales and other uses to which it has been put.

6. A physician may prescribe but not dispense these drugs to habitual users under treatment, provided he keeps a record of the patient, together with the name and quantity of drug prescribed, and reports the same in monthly reports to the body or commission enforcing the law.

7. Illegal possession a crime.

8. Prescription files and records subject to inspection of proper officers.

9. Severe penalties of imprisonment.

The Act not to apply to cough remedies, proprietary medicines, or other medical preparations sold as medicines and not for the purpose of evading the provisions of this Act or supplying habitues with the drug if they contain not over (to the ounce)

2 grains of opium,
¼ grain of morphine,
¼ grain of heroin,
¾ grain of codeine.

(Or not more of any other derivative or compound of same.)

Providing the quantities of the drugs contained shall be plainly stated upon the label.

Also providing that any preparation intended for soothing syrups for infants shall not contain any of the drugs.

Also providing that regular practising physicians can supply the drugs, providing they comply with the other provisions of this Act of Assembly with reference to reporting and keeping a record.

And providing that prescriptions or orders for plasters, liniments, and ointments when intended for external use only, and when the quantity of the drug is plainly marked on the label, shall be permitted.

In conclusion, permit me to say that I believe that if laws such as these were passed by the national government, and the different States of this Union, there is no reason why the Narcotic Laws of the country should not then be effective; but even with the best of legislation, we should always remember that "eternal vigilance is the price of liberty;" and I know of no better means of keeping this agitation before the State than through the columns of the news-

papers of Pennsylvania. It is true that it may be said that these laws will be a little burdensome for the pharmacists; but they should remember that the laws are for the protection of their brother man and that they should be willing to bear part of the burden, for if the pharmaceutical profession should not be willing to assume its share and assist in the passage of some practical law, it is more than likely that some others, not acquainted with the pharmaceutical profession, might attempt to draw and pass impractical and oppressive laws; for it can be said with certainty that the sale and consumption of habit-forming drugs will be controlled in this great country of ours.

ABSTRACTS OF SOME OF THE PAPERS PRESENTED TO THE PENNSYLVANIA AND NEW JERSEY STATE PHARMACEUTICAL ASSOCIATIONS.

By John K. Thum, Ph.G.,
Pharmacist at the German Hospital, Philadelphia.

Unguentum Resorcini Compositum.—By William Dulin, Penn. Pharm. Assoc.

After some experimentation with this ointment the author arrives at the conclusion that the water in the hydrous wool-fat is the cause of the discoloration which manifests itself after the ointment has been made some time; the water dissolving the resorcin, which in turn exerts some action on the oil of cade. To overcome this tendency he recommends that the hydrous wool-fat be replaced by the anhydrous.

Asafetida.—By W. H. Pearson, Penn. Pharm. Assoc.

When the Food and Drugs Act first went into effect there was considerable improvement in the quality of asafetida imported to this country, but after a few lots of inferior quality failed to be deported. European merchants declared that the best grades were unobtainable in sufficient quantity. The author states that the motive underlying this plea was to influence the Revision Committee of the Pharmacopœia to adopt lower standards.

He also states that it is difficult to get representative samples of this gum and illustrates as follows: "A sample consisting of several lumps was pounded in an iron mortar till fairly uniform and the

ash amounted to 24.9 per cent., the alcohol soluble to 50.86 per cent. The same case was later resampled and the average of four results obtained indicated 54.5 per cent. of ash and only 23.2 per cent. of alcohol soluble material, almost the reverse of the results formerly obtained."

To determine the per cent. of alcohol soluble material he puts 10 grammes of the sample and 150 c.c. of alcohol in a mechanical shaker for several hours, collecting the insoluble portion on weighed filter paper, washes well with an excess of alcohol, and dries to constant weight at 100° C.

Theoretically, he says, powdered asafetida should be of the same standard as the whole gum, but it is not convenient because of the moisture and volatile material that is present. If dried before powdering much volatile material is lost. He shows the loss of asafetida during the drying and powdering of four different lots, the average loss being 20.25 per cent., the loss being nearly all of the volatile and alcohol soluble portion, and this loss, he states, increases the ash and alcohol insoluble material in the finished product.

He also says that the results of investigation of powdered samples do not vary so much as samples of the gum because of the powder's comparative uniformity.

A definite standard for the amount of soluble material in the tincture should be insisted upon, he states in closing.

TINCTURA OPII CAMPHORATA.—By WILBUR F. HORN, Penn. Pharm. Assoc.

The author is of the opinion that substituting an equivalent amount of the tincture of opium for the opium present in the official formula for camphorated tincture of opium possesses distinct advantages, such as facility of manufacture and saving of time.

A METHOD OF ASSAYING THE OINTMENT OF MERCURIC NITRATE, U.S.P.—By I. V. STANISLAUS and E. ARTHUR EATON, Penn. Pharm. Assoc.

Stating that they were unable to find any assay for this ointment in either standard text-books or journals, the authors proceed to give a method of their own which, they remark, is accurate within about 0.13 per cent.

"About 3 grammes of the ointment were weighed in a beaker

and 3 grammes of potassium hydroxide, dissolved in 35 c.c. of water, added. This was then heated upon the water-bath until saponification was complete and allowed to stand for from 24 to 48 hours, to allow the separation of the mercuric oxides. The mixture was then filtered (the filtrate being reserved to ascertain if any further deposit occurred). The precipitate was then washed well and transferred, paper and all, to an Erlenmeyer flask and 50 c.c. of nitrohydrochloric acid added. The flask and contents were shaken occasionally until solution was complete. The solution was then diluted with 50 c.c. of water and the paper pulp filtered off and washed well. The filtrate was then evaporated to dryness in capsule, and the residue of mercuric chloride taken up with 100 c.c. of water and dissolved by the aid of heat. Hydrogen sulphide gas was next passed in until saturation; the precipitated mercuric sulphide filtered off and washed. Next, the precipitate, paper and all, was transferred to a glass-stoppered bottle, an excess 30 c.c. of $\frac{N}{10}$ iodine solution added and 5 c.c. of carbon disulphide. The bottle was shaken for five minutes and allowed to stand for half an hour. Then the excess of iodine was titrated with $\frac{N}{10}$ sodium thiosulphate solution."

Some Formulas for Elixirs Proposed for Recognition in the Revision of the National Formulary.

George M. Beringer, N. J. Pharm. Assn., offers some formulas for elixirs to be included in the next revision of the N.F. with the hope that they be tried and criticized by practical pharmacists.

In speaking of elixir of calcium lactophosphate the author states that as the salt is now commercially obtainable a definite weight of it should be directed to be dissolved in aromatic elixir. The following formula is suggested:

Calcium lactophosphate	25.0 Gm.
Lactic acid	8.0 c.c.
Aromatic elixir to make	1000.0 c.c.

The present National Formulary formula for elixir of glycerophosphates is deficient in flavoring as it contains only 300 c.c. of aromatic elixir. He modifies the formula and adds a requisite amount of compound spirit of orange. Lactic acid is used instead of phosphoric acid as it seems to be more effective in preventing precipitation of these salts. The modified formula is as follows:

Elixir Glycerophosphatum.

Sodium glycerophosphate (75 per cent.)	22 Gm.
Calcium glycerophosphate	8 Gm.
Lactic acid	8 c.c.
Glycerin	300 c.c.
Compound spirit of orange	12 c.c.
Alcohol	125 c.c.
Purified talc	15 Gm.
Distilled water, sufficient quantity to make	1000 c.c.

The author also recommends that the next revised National Formulary contain a compound elixir of the various glycerophosphates and advises the inclusion in this book of the following formula:

Elixir Glycerophosphatum Compositum.

Sodium glycerophosphate (75 per cent.)	44	Gm.
Calcium glycerophosphate	16	Gm.
Iron glycerophosphate	3	Gm.
Manganese glycerophosphate	3	Gm.
Quinine glycerophosphate	1	Gm.
Strychnine glycerophosphate	0.125	Gm.
Lactic acid	8	c.c.
Compound spirit of cardamom	10	c.c.
Alcohol	125	c.c.
Glycerin	350	c.c.
Purified talc	15	Gm.
Distilled water, sufficient quantity to make	1000	c.c.

As the formates have within recent years become exceedingly popular abroad, and as the British Pharmaceutical Codex has included formulas for elixirs and a syrup, which indicates more or less use in the British Islands, he advises the introduction of the following formulas:

Elixir Formatum.

Potassium formate	50 Gm.
Sodium formate	50 Gm.
Aromatic elixir, sufficient quantity to make	1000 c.c.

Elixir Formatum Compositum.

Sodium formate	32	Gm.
Magnesium formate	16	Gm.
Strontium formate	30	Gm.
Lithium formate	7.5	Gm.
Quinine formate	7.5	Gm.
Formic acid	10	c.c.
Compound spirit of orange	10	c.c.
Acetic ether	1	c.c.
Alcohol	100	c.c.
Glycerin	300	c.c.
Purified talc	20	Gm.
Distilled water, sufficient quantity to make	1000	c.c.

The Compound Spirit of Cardamom

called for in these formulas is as follows:

Oil cardamom	20	c.c.
Oil clove	1	c.c.
Oil cassia	2	c.c.
Oil orange	20	c.c.
Oil caraway	0.1	c.c.
Anethol	1	c.c.
Alcohol, to make	200	c.c.

The Need for the Practical Pharmacist in Pharmacopœial Revision.

George M. Beringer, N. J. Pharm. Assoc., makes the statement that the development and progress made by the profession of pharmacy as a separate branch of medicine accounts for the increasing influence of pharmacists in the matter of pharmacopœial revision the last several decades.

Physicians comprising the Revision Committee elected by the Convention of 1840 realized the value of practical pharmacists, asked for such aid as was needed by them in revising this book, and were grateful and quick to acknowledge their indebtedness. Following the 1840 Convention, delegates from schools of pharmacy and pharmaceutical societies have worked together to revise and produce an acceptable national standard. He then goes on to say

that there is as much need now in the revision of this book for the experience and practical knowledge of the pharmacist as ever before. Formulas for the various preparations should be practical; correct, both as to quantities and ingredients; and should be workable on a small scale in the average retail pharmacist's laboratory as well as on a large scale in that of the manufacturer.

The Pharmacopœia, he says in closing, can only be improved and brought nearer to our ideal of perfection by each one fully discharging his duty in connection therewith. The pharmacist has his share of the responsibility. He should test the formulas, report errors found in the book, and suggest improvements and better methods for exhibiting some of the remedies.

THE PHARMACEUTICAL INSTITUTE OF THE UNIVERSITY OF BERLIN.*

By M. I. WILBERT, Washington, D. C.

As a contribution to the Centenary of the University of Berlin, which was celebrated in the early fall of 1910, the director of the Pharmaceutical Institute has compiled the story of the origin and evolution of the course in pharmacy at this University, from its foundation in 1810 to the year 1910.

The resulting, rather ornate, volume of 134 oblong pages also embodies a description of the present Institute illustrated by upwards of 48 photographic reproductions and diagrams.

This latter portion of the book is particularly interesting to American readers because it serves to reflect, in a way not commonly met with, the thoroughness and completeness of the courses in pharmaceutical instruction that are offered in connection with German universities. It also illustrates the need for assisting pharmaceutical schools by liberal endowments or material contributions from the general education fund, if pharmacy is to hold its own as a professional calling and is to continue to take an active part in the development of the sciences that are involved.

The University of Berlin has been particularly fortunate in

* The frontispiece in this issue, to illustrate this article, was made after a photograph which Professor Thoms, Director of the Pharmaceutical Institute of the University of Berlin, kindly sent to the editor of this JOURNAL.—EDITOR.

its selection of men as teachers in the sciences related to pharmacy. The teachers who have assisted in developing the course of pharmacy at this university include men whose names are widely known and who are generally recognized as having been active in the development of the several sciences in which they were specialists.

The first teacher in chemistry was Martin Heinrich Klaproth (1743–1813) who is generally recognized as being second only to the immortal Scheele in practical contributions to the pharmaceutical chemistry of his day. One of his younger contemporaries was Sigismund Friedr. Hermbstätt (1760–1833) a practical pharmacist who taught chemistry and pharmacy and also contributed many articles on pharmaceutical-chemical subjects to the literature of his time.

One of the successors to Klaproth was Eilhard Mitscherlich (1794–1863) a student and associate of the great Berzelius and the discoverer of a number of now well-known chemical compounds, among others, of permanganic acid and its salts. Associated with Mitscherlich were such well-known men as Heinrich Rose (1795–1864) a teacher as well as an investigator, Friedr. Wöhler (1800–1882) later the associate and successor of Liebig at Giessen, H. G. Magnus (1802–1870) and Gustav Rose (1798–1873).

Among the later teachers of chemistry were such well-known men as E. R. Schneider, A. W. Hofmann, Adolf Baeyer, Adolf Pinner, Emil Fischer, and the present director of the Institute, Dr. Hermann Thoms.

The list of teachers of physics include such well-known names as Dove, Magnus, v. Helmholtz, Kundt and Wehnelt.

In botany Heinr. Friedr. Link (1765–1851) was followed in 1851 by Alexander Braun who had as associates O. C. Berg, C. H. E. Koch and N. Pringsheim, all men who were able to leave their imprint on the progress of botany and pharmacognosy. Among the later teachers of botany and pharmacognosy we find such well-known names as Karsten, Garcke, Eichler, Schacht and Engler.

These all too limited references will serve to demonstrate that the century of pharmaceutical instruction at the University of Berlin has been one of promise and possibilities despite the fact that for upwards of 90 years the course was severely handicapped by hopelessly inadequate facilities for laboratory instruction and even deficient provision for lectures and demonstrations.

The present status of the Pharmaceutical Institute of the University of Berlin, on the other hand, is an excellent illustration of the benefits that may and do accrue to the community at large by fostering independent pharmaceutical laboratories and liberal pharmaceutical training.

In connection with the reviews of the annual reports of the Pharmaceutical Institute of the University of Berlin that have been published in this JOURNAL, attention has been called to some of the various activities of the Institute. Not the least valuable of the work now done, from the viewpoint of the public health, is the exposing of secret or proprietary remedies that has been undertaken at the request and with the assistance of the German Society of Apothecaries.

The work that has been done in connection with new remedies is also of importance, while the original chemical and phytochemical investigations that have been reported have attracted widespread attention and have contributed much to pave the way for securing to pharmacy the recognition that the calling properly deserves.

Altogether it may be pointed out that the Pharmaceutical Institute, as now constituted, bids fair to be an active factor in bringing about a realization of the possibilities outlined by Flückiger, nearly thirty years ago, in recommending the practical elaboration of the courses of pharmacy in connection with German Universities.

In his recommendation, reproduced by Thoms in the volume under discussion, Flückiger points out that many of the problems relating to the preservation of the public health can and should be solved by pharmacists.

He further points out that if pharmacists were given the necessary training partially or wholly at the expense of the State they in turn would be in position to assist, in a practical way, in improving the hygienic conditions of the communities in which they reside.

As intimated above it is only in very recent years that the authorities, recognizing the possibilities of practical returns, saw fit to provide the necessary facilities for laboratory investigations and original research that are embodied in the evidently well equipped and truly magnificent institute at Dahlen adjoining the grounds of the Botanical Garden of the University of Berlin.

For us in America the excellent work that is being done for

the public welfare in the Pharmaceutical Institute of the University of Berlin should be both an inspiration and a promise. An inspiration to emulate the spirit that dominated the men who through the many years of adversity struggled on, despite their inadequate facilities, instilling into their students the scientific spirit that dominated them and their predecessors.

The present elaborately equipped Institute of the University of Berlin is a promise in that it demonstrates that properly directed scientific work will and must be recognized and that pharmacy is assured of a promising future in all parts of the civilized world where its followers are earnestly and honestly laboring for the public good.

CORRESPONDENCE.

THE AMERICAN JOURNAL OF PHARMACY,
145 N. 10th St., Phila., Pa.

GENTLEMEN: The Committee on Standards for Unofficial Drugs and Chemical Products are engaged in formulating standards for a number of articles not now recognized by the U. S. Pharmacopœia. Many of the articles which they are standardizing will, no doubt, be admitted into the Revision of the National Formulary, now in process, and if the standards as promulgated by this Committee are adopted in that revision, then they will become the legal standards of the country.

It has been suggested that a list of the monographs immediately under consideration should be published in the pharmaceutical journals so that the importers, manufacturers and dealers who are interested will feel at liberty to make suggestions as to the proper standards to be adopted. It is the desire of the Committee to be absolutely fair and accurate as far as possible in our work, and we welcome any suggestions that may be offered. The following list of titles covers only those on which monographs are now before the Committee:

Absinthium, Aconite Leaves, Adonis, Albumen (Dried Blood), Albumen (Dried Eggs), Althæa Leaves, Ammonium Hypophosphite, Angelica Root, Angelica Seed, Areca, Arnica Root, Barium Peroxide, Boldo Leaf, Bromauric Acid (Commercial Gold Tribromide), Buckthorn Berries, Cacao (Cocoa), Cactus Grandiflorus, Calamine, Calcium Glycerophosphate, Calcium Peroxide, Canella Alba, Cas-

carilla, Caulophyllum, Celery Seed, Centaury, Coal Tar, Cocculus Indicus, Condurango, Coto Bark, Cudbear, Diacetyl Morphine, Diacetyl Morphine Hydrochloride, Dextrin (White), Dextrin (Yellow), Euphorbia Pilulifera, Foenugreek, Formic Acid, Formic Acid (Concentrated), Kava Kava, Kieselguhr, Kola, Lead Carbonate, Oil Cardamom, Phenolphthalein, Poppy Capsules, Potassium Glycerophosphate, Quince Seed, Red Gum (Eucalyptus), Kino, Rennin, Saffron, Sherry Wine, Strontium Arsenite, Thuja (Arbor Vitæ), Tonka Bean, Venice Turpentine, White Pine Bark, Zinc Peroxide.

It is the intent to publish, from time to time, supplemental lists as new articles are taken up for standardization. In order to give the desired publicity to our work, we respectfully request the pharmaceutical press to give sufficient space to present this matter and request that any suggestions as to the proper standards to be adopted should be sent to the undersigned.

Yours respectfully,

GEORGE M. BERINGER,
Chairman.

501 Federal St., Camden, N. J.

BOOK REVIEWS.

PHARMACOPŒIA NEDERLANDICA, EDITO QUARTA, SUPPLENDA ET MUTANDA I. AMSTELODAMI MCMX. This, the first instalment of additions and corrections to the fourth edition of the Netherlands Pharmacopœia, published in 1905, comprises an octavo pamphlet of approximately 55 pages the same shape and size as the pharmacopœia published 5 years ago.

The book or pamphlet is published by the standing pharmacopœia commission and like the Netherlands Pharmacopœia itself is available in both a Dutch and a Latin edition.

The new additions number 14 and include, Acidum acetylosalicylicum, Acidum diaethylobarbituricum, Amylum Manihot, Antipyrinum cum Coffeino et Acido citrico, Dimethylaminoantipyrinum, Emulsum Olei Iecoris Aselli compositum, Extractum Cola liquidum, Flores Lavandulæ, Hexamethylentetraminum, Semen Cola, Solutio Hydrochloratis Suprarenini, s-Suprareninum, Tannas hydrargyrosus, and Thiosulphas Natricus.

The recognition of suprarenal alkaloid under the general title

s-Suprarininum with adrenalinum as a synonym is rather interesting because of the comparatively small amount of attention that appears to have been given this product on the Continent of Europe. It is also interesting to note that the Dutch title "l-suprarenine" and the final requirement that the product on incineration is to leave no residue would indicate that the synthetic, lævorotatory, product is preferred.

The corrections affect no less than 110 of the official titles and are mainly changes in requirements and tests. All of the changes are important in that they suggest precautions that should be taken in connection with a work of this kind to insure fair and equitable standards and requirements.

In this connection it is interesting to note that in place of making definite fixed requirements for the alkaloid content of drugs and pharmaceutical preparations the Ph. Ndl. IV now permits of a range of standard or a variation of approximately 20 per cent. from the original requirements.

The greater number of changes embodied in this first instalment of corrections are due to an elaboration of the requirements for the specific gravity of liquid preparations, usually a material increase of the permissible variation.

The directions for keeping many of the official drugs and preparations are also somewhat elaborated, particularly in connection with narcotic leaves and herbs which are now directed to be protected from the influence of light.

Apart from the changes mentioned it may be noted that the comprehensive and in many ways elaborate descriptions for organic drugs appear to be satisfactory, only one additional change being embodied in the present list. This change is an increase in the permissible ash content of lupulin from 6 to 10 per cent., making it similar to that of the U.S.P.

The pamphlet, apart from the suggestions on requirements to be avoided or at least interpreted liberally, is a commendation of the care exercised by the Committee of Revision which prepared and published the Netherlands Pharmacopœia of 1905.

M. I. W.

OBITUARY.

LOUIS DOHME.

Louis Dohme, president and one of the founders of the well-known pharmaceutical manufacturing firm of Sharp & Dohme, died at the Union Protestant Infirmary, Baltimore, January 12, after an illness of some weeks, neuritis being the direct cause of his death.

While always applying himself closely to business affairs up until a few years ago, Mr. Dohme was in the habit of going abroad during the summer for rest and recreation. Early in June last he made his annual pilgrimage abroad, spending the most of his time at the baths of Wiesbaden, where he had received benefit on a previous visit. On his return trip, about 9 weeks ago, he was taken ill aboard the steamer, arriving in New York in an unconscious condition. From the steamer he was taken to a sanatorium in New York. Here he remained two weeks, making slight improvement, when he was taken to the Infirmary in Baltimore, where it was soon realized that his condition was serious.

Mr. Dohme was a foreigner by birth, he having been born in Obernkirchen, Germany, on July 6, 1837. His early education was obtained in a private school in his native town. When he was fifteen he and his five brothers and one sister were brought to this country by their parents, the late Charles and Sophia Dohme.

After attending Knapp's School, in Baltimore for several years, young Dohme entered the drug store of the late A. P. Sharp, where he soon gave evidence of those qualities which led to the prominence and success which he attained in the chemical-pharmaceutical manufacturing line. While serving his apprenticeship he attended the Maryland College of Pharmacy, graduating in 1856 with the highest honors. Four years later he was taken into the firm, the name being changed to Sharp & Dohme. The store occupied the corner at Pratt and Howard Streets, a part of the present site of the firm, and one of Mr. Dohme's first moves after the formation of this partnership was to increase the capacity of the building with the object of engaging in the manufacture of pharmaceutical preparations on a small scale. When in 1866 his brother, Charles E. Dohme, was taken into the firm, it was decided to increase still further the laboratory facilities and to engage in the manu-

facture of a general line of preparations. In the division of their labors, Charles E. Dohme took charge of the laboratories and Louis began to introduce their products to neighboring physicians, pharmacists and wholesale druggists, finally extending his territory until it practically covered the United States east of the Rocky Mountains. It is said that Mr. Dohme made many friends among those he visited, and that these have remained as loyal patrons of the firm ever since.

Mr. Sharp withdrew from the firm in 1885, and the next year it was incorporated with Louis Dohme president, Charles E. Dohme vice-president and Ernest Stauffen secretary and treasurer, the latter also having charge at present of the firm's New York office. Besides the officers, C. P. Dohme, a younger brother, and Dr. A. R. L. Dohme were included in the Board of Directors.

Mr. Dohme was not alone interested in seeing his firm advance, but was active in advancing the cause of pharmacy in other ways, he having held several positions of honor and trust. For some years he was chairman of the Board of Examiners of the Maryland College of Pharmacy and in 1875 was elected president of the College, serving in this position until 1890, when he was succeeded by his brother Charles E. Dohme, who held the position until the affiliation of the College and the University of Maryland. In 1900 he was elected a member of the Board of Trustees of the U. S. Pharmacopœial Convention. He was a member of the Maryland State Pharmaceutical Association and a life member of the American Pharmaceutical Association, and a member of the social clubs, the Germania and Country Clubs of Baltimore. He was fond of art and literature, and devoted much of his spare time to the reading of the classics.

Mr. Dohme was unmarried, and had made his home for the past 25 years with his brother, Charles E. Dohme, at 822 North Carrollton Avenue. His funeral was held here.

He is survived by two brothers—Messrs. Charles E. and William F. Dohme. He also left six nephews—Drs. A. R. L. and Gustavus C. Dohme; Messrs. Justus Dohme, C. Louis Dohme, of Culpeper, Va.; William I. F. Dohme, of Montclair, N. J., and Carl A. G. Frisius—and six nieces—Misses Adele C. Dohme, Clara Dohme, Nettie Dohme, of Montclair, N. J.; Mrs. Charles G. Holzhauer, of Newark, N. J.; Mrs. Alma Von Marees and Miss Agnes Frisius.

A portrait of Louis Dohme is given in the frontispiece of the

June, 1910, issue of this JOURNAL, as one of the members of the Board of Trustees of the U. S. Pharmacopœial Convention of 1890.

PHILADELPHIA COLLEGE OF PHARMACY.

MINUTES OF THE QUARTERLY MEETING.

The quarterly meeting of the College was held on December 27th, 1910, at 4 P.M. in the Library. Eleven members were present. The President, Howard B. French, presided. The minutes of the semi-annual meeting held September 26, were read and approved. The minutes of the Board of Trustees for September, October, and November, were read by the Registrar, and approved.

The President appointed the following members as the Permanent Committee on Centenary Celebration of the College, George M. Beringer, Chairman, Joseph P. Remington, Henry Kræmer, Samuel P. Sadtler and M. I. Wilbert; and on the Committee on Legislation, Joseph P. Remington, Chairman, M. I. Wilbert, William McIntyre, Warren H. Poley, Theodore Campbell and Charles Leedom. Professor C. B. Lowe presented through J. M. Maris & Co. a small ground stopper bottle which was formerly used in the store of the late Charles A. Heinitsh, of Lancaster, and said to be one hundred and thirty years old. The thanks of the College were tendered the donor.

The President appointed Joseph W. England, George M. Beringer, and Joseph P. Remington a committee to draft suitable resolutions on the death of Professor Hallberg, and to report to the meeting of the Board of Trustees to be held on January 3, 1911.

ABSTRACT FROM THE MINUTES OF THE BOARD OF TRUSTEES.

September 6, 1910. Sixteen members present. Mr. Wallace Procter, an ex-member, was also present. The Committee on Announcement reported the issue of Bulletin No. 4, Vol. 2; also that a Spanish edition of the Bulletin was being prepared.

Mr. French read a communication from the executors of the estate of Robert W. Johnson, relative to the legacy left by him to

the College. He also read the bond necessary to be filled out, upon receipt of which the legacy would be paid.

Mr. England read several communications relative to the mailing of periodicals issued by the College, which were referred to the Committee on Publication for their consideration, and to be reported on to the College.

Mr. Cliffe read a communication relative to entrance examinations, which was referred to the Committee on Instruction.

October 4, 1910. Fourteen members present. The Committee on Property reported the changes made in the Pharmaceutical Laboratory and on the fifth floor, the latter giving a suitable room for physical training. Mr. Cliffe reported that the Director, Dr. Schleif, and Instructor, Mr. Beam, considered the room well lighted and ventilated, and when equipped would prove one of the best gymnasiums in the city.

Committee on Library reported, Librarian, Miss Katharine E. Nagle in charge, and the Committee on Examinations reported that James Henry Allen, Frank Earl Haines, and Miss Aase Teisen had satisfactorily passed all examinations in the Course for the Certificate of Proficiency in Chemistry, and that Peter Amsterdam had satisfactorily passed the examination for the Certificate of Proficiency in the Food and Drug Course; and these certificates were accordingly awarded.

Committee on Announcement reported that the Special Bulletin relating to the course of instruction in Analytical Chemistry and Food and Drugs course was in press, and that the Spanish edition was being printed.

Committee on Commencement reported that the Academy of Music had been leased for May 25, 1911.

Committee on Scholarships recommended the names of eleven students to receive the various scholarships available, and the recommendations were approved.

A communication from the Board of Education was read recommending a graduate from the Central High School, and one from the Northeast Manual Training School for scholarships, and these recommendations were approved.

A communication was read from H. H. Cregg, of the Class of 1883, requesting a duplicate diploma, which was granted under the usual condition.

A communication was read from the Secretary of the State Board of Pharmacy relative to a Certificate of Actual Attendance at the Lectures and Laboratories of those graduates of the College who desire to take the examination for Registered Pharmacist. After considerable discussion, a committee consisting of Professors Remington, Sadtler, and Lowe, was appointed to formulate and put in effect such a method.

November 1, 1910. Twelve members present.

Committee on Library reported a decided improvement in the work and management of the Library. Library rules also the State law relative to mutilation of books and library property were displayed in the Library.

Committee on Instruction called attention to the Special Lectures arranged for 1910–1911, and urged that the attention of the students, especially the graduating class, be directed to these lectures.

Committee on Announcement reported that the October Bulletin, No. 1, Vol. 3 was ready for distribution.

Communications were read from students to whom scholarships had been awarded, expressing their appreciation.

A communication from the Board of Education was read, recommending Karl N. Krogh, a graduate of the Southern Manual Training School, as worthy of a scholarship, and on motion, this award was made.

The Treasurer reported that five thousand dollars ($5000) had been paid on account of the mortgage.

C. A. WEIDEMANN, M.D.,
Recording Secretary.

DECEMBER PHARMACEUTICAL MEETING.

The regular Pharmaceutical Meeting of the Philadelphia College of Pharmacy was held on Tuesday afternoon, December 20, 1910, at 3 o'clock, Mr. E. M. Boring presided.

Mr. Clarence M. Kline read a paper on "The Thirty-Sixth Annual Meeting of the National Wholesale Druggists' Association held at Dallas, Texas, November, 1910," which will be published in a later issue of this JOURNAL. The paper was discussed by Professor Kraemer, Dr. C. B. Lowe, Mr. Kline, and the chairman.

Mr. Kline submitted a copy of that portion of the General Code

of Ohio relating to paints, white lead and turpentine. Its provisions are as follows:

SEC. 6331. No person, firm or corporation shall expose for sale or sell within this state, paint, turpentine or linseed oil, which is labeled or marked so as to tend to deceive the purchaser thereof as to its nature or composition, or which is not labeled as required by this chapter.

SEC. 6331-1. No person, firm or corporation shall manufacture, mix for sale, sell, offer for sale, for other than medicinal purposes, under the name of turpentine, or spirits of turpentine, or any compounding of the word turpentine, or under any name or device illustrating or suggesting turpentine, or spirits of turpentine, any article which is not wholly distilled from rosin, turpentine gum, or scrap from pine trees, and unmixed and unadulterated with oil, benzine or any other foreign substance of any kind whatsoever, unless the package containing same shall be stenciled or marked, with letters not less than two inches high, adulterated spirits of turpentine. Nothing herein contained shall be construed as prohibiting the manufacture or sale of any such compound or imitation, providing the container shall be plainly marked, and the purchaser notified, as aforesaid.

SEC. 6332. The term "paint" as used in this chapter shall include oxide of zinc, red lead and white lead, dry or in any kind of oil, and a compound intended for like use, colors ground in oil, paste or semipaste paint, and liquid or mixed paint ready for use.

SEC. 6333. The label required by this chapter shall clearly and distinctly state the name and residence of the manufacturer of the paint, or of the distributor thereof or of the party for whom it is manufactured, and show the name or names of any substance or substances used in quantities sufficient to be dangerous or injurious to human life or health whether through absorption, contact or inhalation. The label shall be printed in English language in plain legible type in continuous list with no intervening matter of any kind.

SEC. 6334. The label on paint sold by measure shall show the net measure of the contents of the container, and on paint sold by weight, the net weight of the contents of the package.

SEC. 6335. The possession of an article or substance improperly marked or inaccurately labeled as provided in this chapter, by a person, firm or corporation dealing therein shall be prima facie evidence that it is so kept in violation of this chapter, and the penal statutes relating thereto.

SEC. 6336. The dairy and food commissioner of Ohio shall enforce the provisions of this chapter and the penal statutes relating thereto, and such commissioner, his assistants, experts, chemists and agents shall have access and ingress to the places of business, stores and buildings used for the sale of paint, turpentine or linseed oil, and may open any package, can, jar, tub or other receptacle containing an article that may be sold or exposed for sale in violation of such provisions or statutes. The inspectors, assistants

or chemists appointed by such commissioner, shall perform like duties and have like authority under this chapter and the penal statutes relating thereto as is provided by law in other cases. Such commissioner shall publish bulletins from time to time giving the results of inspections and analyses, with such other information as he deems suitable.

SEC. 13168. Whoever violates any provision of the law relating to the labeling of paints, mixed paints and similar compounds or white lead by manufacturers or distributors thereof, shall be fined not more than fifty dollars, and for each subsequent offense, shall be fined not less than fifty dollars nor more than one hundred dollars, or imprisonment not less than thirty days, nor more than one hundred days, or both.

Professor Remington presented, on behalf of E. M. Roche, a pharmaceutical recipe book.

Professor Kraemer exhibited the "Tabloid" Photographic Outfit no. 906," put up by Burroughs Wellcome & Co. This comprises a compact equipment of "Tabloid" photographic chemicals for developing and fixing plates, films, papers, and lantern slides; and also "Tabloid" chemicals for intensifying, reducing, sepia toning, copper toning, hardening, clearing, restraining, etc. Sufficient chemicals are provided to make several gallons of solutions in large or small quantities, fresh and vigorous for each occasion, without the trouble of weighing and without waste. A copy of the Wellcome Photographic Exposure Record and Diary, a complete pocket guide to success in field and dark room, is also included. The whole is packed so as to be convenient in travelling.

Professor Kraemer stated that he had found the Wellcome Photographic Exposure Record and Diary a convenient book for recording field work in photography and the Wellcome Exposure Calculator very useful in determining the time exposure to be given.

On account of the difficulty in making good photographs, due to the difficulty in estimating the proper exposure, this book with its simple instructions should prove of great service to the photographer, no matter where or under what condition exposures are made. Again as it is frequently desirable to develop the plates before returning home, this compact equipment of photographic chemicals supplies a want which will be appreciated by photographers who are making exposures away from home.

A complete collection of ground emery samples, received from Walter C. Gold, of Philadelphia, were presented on his behalf by

Professor Kraemer, who also called attention to a specimen of the "Jungle Plant," *Combretum sundaicum,* which he had received from a fellow member, Henry C. Blair.

George C. Goess, of Philadelphia, presented a bottle of Church's Cough Drops which sample is said to be 120 years old. Professor Kraemer remarked that it might be of considerable interest in the years to come if the College had a collection of Proprietary Medicine, many of which in a few years would probably be no longer obtainable, and that the interest in them would lie chiefly in their illustrating a method of medication in vogue at a particular period.

Mr. Henry C. Blair presented an excellent specimen of bauxite from Georgia and a unique specimen of wood carving representing the seven idols of China, each idol being from 3 to 5 cm. long.

President French presented a collection of silver ores which he obtained during a recent trip to Colorado.

Mr. E. H. Eppler, of Philadelphia, presented a hand balance which was used by Professor Maisch in his old store at 1610 Ridge Ave., Philadelphia.

A vote of thanks was tendered the donors for the various articles presented to the College as also to Mr. Kline for his communication.

H. K.

CORRESPONDENCE.

U.S.P. & N.F. Compulsory in New York State

To The Editor of The American Journal of Pharmacy.

Sir: Attention is called to the change of rules by the New State Board of Pharmacy and approved by the regents that every pharmacist and druggist in the State of New York must possess a copy of the latest edition of the U.S.P. and N.F.

The rule of the old Board required a copy of the U.S.P. or some other publication embodying its text in full. Rule 7 of the New State Board of Pharmacy reads as follows:

"Every pharmacy and drug store shall own and have on file at all times the eighth decennial revision of the Pharmacopœia and the

latest edition of the National Formulary and no registration certificate shall be issued till it complies with this rule."

It is of course also advisable to have a dispensatory as a reference book in well regulated pharmacy. As the rule is very likely to be enforced I earnestly advise your subscribers in New York State to supply themselves with copies of the N.S.P.VIII and N.F.III which books can be obtained readily through the wholesale drug trade.

Let us hope that other State Boards of Pharmacy will follow this example, in fact that State Laws will be enacted and enforced making the possession of a copy of the latest edition of the U.S.P. and N.F. compulsory in every pharmacy and drug store in the U.S.

OTTO RAUBENHEIMER, Ph. G.